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| 10/564,852 | 01/17/2006 | Koji Abe | 740709-550 | 5132 |

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| EXAMINER | |
|---|---|
| WEINER, LAURA S | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/564,852 | ABE ET AL. | |
| | Examiner | Art Unit | |
| | /Laura S. Weiner/ | 1795 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *14 October 2009 and 01 December 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *13-17* is/are pending in the application.

4a) Of the above claim(s) *16 and 17* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9-06 and 12-08*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of Species III which is drawn to an electrolyte comprising an alkyne compound containing R25-R27 which are each a hydrogen atom, W is an oxalyl group and Y6 is an alkynyl group having 2-12 carbon atoms and no aromatic compound in the reply filed on 10-14-09 and 12-1-09 is acknowledged. The traversal is on the ground(s) that an electrolyte comprising the above alkyne compound and in addition of an aromatic compound cited in claims16 and claims 17. This is not found persuasive because prior art reading on just the electrolyte comprising an alkyne compound does not have to contain an additive so this makes the searches different. In addition, an electrolyte comprising an alkyne compound containing R25-R27 which are each a hydrogen atom, W is an oxalyl group and Y6 is an alkyl group having 1-12 atoms was also searched.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 16-17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10-14-09 and 12-1-09.

***Claim Rejections - 35 USC § 112***

3. Claim 15 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 15 is rejected because claim 13 from which the claim depends from already claims vinylene carbonate. Therefore this claim does not further limit claim 13.

4. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamoto et al. (US 2002/0122988)/(US 6,866,966) in view of Koshina (JP 2003-142075, abstract).

Hamamoto et al. ('988) teaches on page 4, Example 1, a battery comprising an electrolyte comprising EC/DMC, a cathode comprising a complex metal oxide such as LiCoO2, which is coated on an aluminum foil, and an anode comprising graphite or a carbonaceous material which is coated on a copper foil. Hamamoto et al. ('988) teaches on page 10, Example 33, that the electrolyte comprises EC:PC:**VC**:DEC=25:8:**2**:65, volume ratio]. Hamamoto et al. ('988) teaches on page 10, [01844], that the electrolyte solution further comprises **2 wt% of methyl 2-propynyl-carbonate** [R25-R27 are hydrogen, W is an oxalyl group (C=O) and Y6 is an alkyl group, specifically CH3].

Hamamoto et al. discloses the claimed invention except for specifically teaching that the positive electrode composition layer has a density in the range of 3.2-4.0 g/cm3

and the negative electrode comprises a negative electrode composition layer having a density in the range of 1.3-2.0 g/cm3.

Koshina teaches a battery providing a negative electrode comprising a cathode comprising LiCoO2 having a density of 3.3-3.7 g/cm3 coating on an aluminum foil, an anode comprising graphite having a density of 1.4-1.8 g/cm3 coated on a copper foil and an electrolyte solution. Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a negative electrode comprising a cathode comprising LiCoO2 having a density of 3.3-3.7 g/cm3 coating on an aluminum foil and an anode comprising graphite having a density of 1.4-1.8 g/cm3 coated on a copper foil as taught by Koshina for the battery taught by Hamamoto et al. because Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

5. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamoto et al. (6,927,001) in view of Koshina (JP 2003-142075, abstract).

Hamamoto et al. teaches in column 5, Example 1, a battery comprising a cathode comprising LiCoO2 coated on an aluminum foil, an anode comprising graphite coated on copper foil and an electrolyte comprising PC:DMC and 1.5 wt% VC and 1.5 wt% PS. Hamamoto et al. teaches in column 9, Example 20, Table 10, that Example 1

was repeated except that the solvent was EC/PC/DEC and additives comprising 1.5 wt% VC and 1.5 wt% MPGC. Hamamoto et al. teaches in column 5, Table 1, that MPGC is methyl propargyl carbonate [R25-R27 are hydrogen, W is an oxalyl group (C=O) and Y6 is an alkyl group, specifically CH3].

Hamamoto et al. discloses the claimed invention except for specifically teaching that the positive electrode composition layer has a density in the range of 3.2-4.0 g/cm3 and the negative electrode comprises a negative electrode composition layer having a density in the range of 1.3-2.0 g/cm3.

Koshina teaches a battery providing a negative electrode comprising a cathode comprising LiCoO2 having a density of 3.3-3.7 g/cm3 coating on an aluminum foil, an anode comprising graphite having a density of 1.4-1.8 g/cm3 coated on a copper foil and an electrolyte solution. Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a negative electrode comprising a cathode comprising LiCoO2 having a density of 3.3-3.7 g/cm3 coating on an aluminum foil and an anode comprising graphite having a density of 1.4-1.8 g/cm3 coated on a copper foil as taught by Koshina for the battery taught by Hamamoto et al. because Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

6. Claims 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hamamoto et al. (US 2002/0122988)/(US 6,866,966) or Hamamoto et al. (6,927,001) in view of Hamamoto et al. (JP 2002-124297, translation) and further in view of Koshina (JP 2003-142075, abstract).

Hamamoto et al. ('988) teaches on page 4, Example 1, a battery comprising an electrolyte comprising EC/DMC, a cathode comprising a complex metal oxide such as LiCoO2, which is coated on an aluminum foil, and an anode comprising graphite or a carbonaceous material which is coated on a copper foil. Hamamoto et al. ('988) teaches on page 10, Example 33, that the electrolyte comprises EC:PC:**VC**:DEC=25:8:**2**:65, volume ratio]. Hamamoto et al. ('988) teaches on page 10, [01844], that the electrolyte solution further comprises **2 wt% of methyl 2-propynyl-carbonate** [R25-R27 are hydrogen, W is an oxalyl group (C=O) and Y6 is an alkyl group, specifically CH3].

Hamamoto et al. ('001) teaches in column 5, Example 1, a battery comprising a cathode comprising LiCoO2 coated on an aluminum foil, an anode comprising graphite coated on copper foil and an electrolyte comprising PC:DMC and 1.5 wt% VC and 1.5 wt% PS. Hamamoto et al. teaches in column 9, Example 20, Table 10, that Example 1 was repeated except that the solvent was EC/PC/DEC and additives comprising 1.5 wt% VC and 1.5 wt% MPGC. Hamamoto et al. teaches in column 5, Table 1, that MPGC is methyl propargyl carbonate [R25-R27 are hydrogen, W is an oxalyl group (C=O) and Y6 is an alkyl group, specifically CH3].

Hamamoto et al. (‘988) or Hamamoto et al. (‘001) discloses the claimed invention except for specifically teaching that electrolyte comprising an alkyne compound containing Y6 having an alkynyl group having 2-12 carbon atoms instead of an alkyl group having 1-12 carbon atoms and having R25-R27 which are each a hydrogen atom, W is an oxalyl group.

Hamamoto et al. ('297) teaches a battery comprising an electrolyte comprising an alkyne compound having formula (I) cited on page 2 of translation teaching where the Y component can be an alkyl group having 1-12 carbon atoms, an alkynyl group, etc. Hamamoto et al. teaches on page 6, of the translation that the compound can be present 0.1-10 wt%. Hamamoto et al. teaches on pages 7-8 of the translation, that the battery comprises a cathode comprising LiCoO2 coated on an aluminum foil and an anode comprising a carbon material coated on a copper foil and an electrolyte comprising PC/EC/DEC and the alkyne compound.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use the alkyne compound disclosed in Hamamoto et al. (‘297) instead of the alkyne compound cited in Hamamoto et al. (‘988) or Hamamoto et al. (‘001) because Hamamoto et al. (‘297) teaches that both compounds are known to be used in a battery comprising a solvent comprising PC and DEC and having the same cathode and the same anode therefore one would expect that these compounds would also function in a similar way and give similar results.

Hamamoto et al. (‘988) or Hamamoto et al. (‘001) discloses the claimed invention except for specifically teaching that the positive electrode composition layer has a

density in the range of 3.2-4.0 g/cm3 and the negative electrode comprises a negative electrode composition layer having a density in the range of 1.3-2.0 g/cm3.

Koshina teaches a battery providing a negative electrode comprising a cathode comprising LiCoO2 having a density of 3.3-3.7 g/cm3 coating on an aluminum foil, an anode comprising graphite having a density of 1.4-1.8 g/cm3 coated on a copper foil and an electrolyte solution. Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a negative electrode comprising a cathode comprising LiCoO2 having a density of 3.3-3.7 g/cm3 coating on an aluminum foil and an anode comprising graphite having a density of 1.4-1.8 g/cm3 coated on a copper foil as taught by Koshina for the battery taught by Hamamoto et al. ('988) or Hamamoto et al. ('001) because Koshina teaches that the battery has high energy density and high safety without easily causing capacity deterioration even in storing the battery in a high-temperature atmosphere.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to /Laura S. Weiner/ whose telephone number is 571-272-1294. The examiner can normally be reached on M-F (6:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Laura S Weiner/
Primary Examiner
Art Unit 1795

February 3, 2010